

CERES Education and Outreach Update

NASA LaRC, Hampton, VA

The S'COOL / MY NASA DATA Team:

Educators, Graphic Artists,
Writers, Editors,
Programmers, DBAs,
Managers, Systems Admins,
Translators
(SSAI STARS II)

Lin Chambers

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Brian Bresina

Camelia Deller

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Jay Madigan

Karen Brown

Denise Lineberry

Marilé Colón Robles

Penny Oots

Preston Lewis

Sarah Crecelius

Tim Marvel

Tina Harte

Tina Rogerson

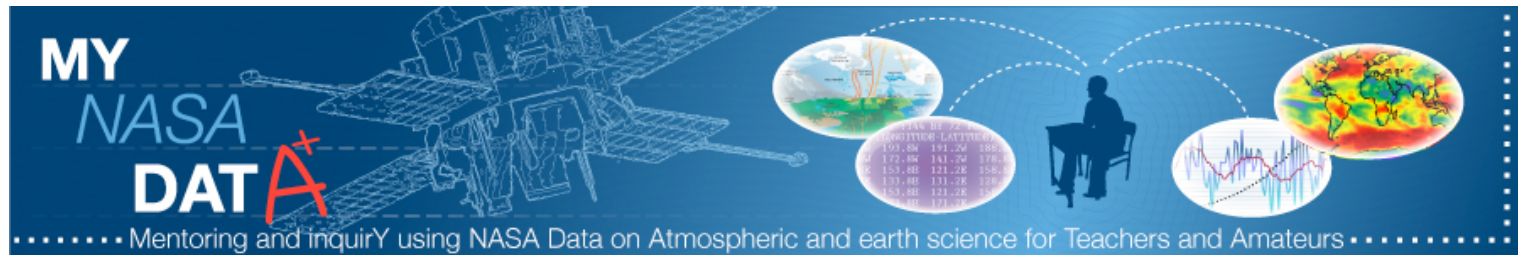
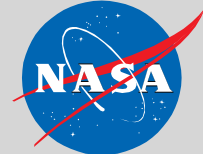
<https://mynasadata.larc.nasa.gov>

<https://scool.larc.nasa.gov>

<https://science-edu.larc.nasa.gov>

Email us at: scool@lists.larc.nasa.gov or mynasadata@lists.larc.nasa.gov

**CERES Science Team Meeting
Spring 2014**



- Involve students in real science.
- Enable K-12 teachers and students, as well as citizen scientists, to explore the large volumes of data that NASA collects about the Earth from space.
- Students use scientific inquiry and math skills as they access and display microsets of the Earth System.
- <http://mynasadata.larc.nasa.gov/>

MY NASA DATA Provides access to CERES:

Lessons

Projects/Ideas

Data Visualization

Workshops/Training

Partnership with Educators

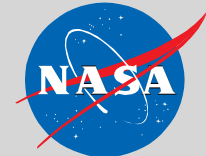
Educational Resources

A Climate Education Portal

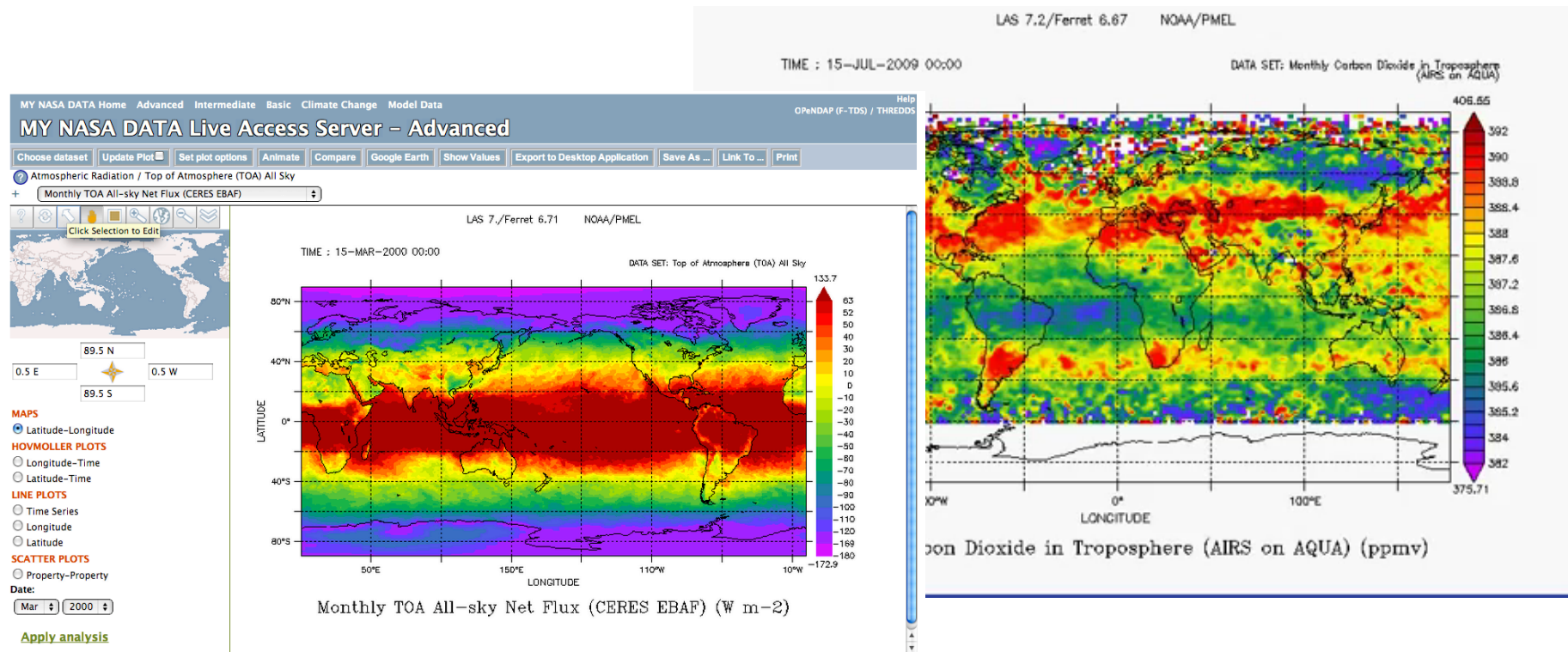
Cross-mission EPO tool

Access to Scientists

A True Scientific Experience

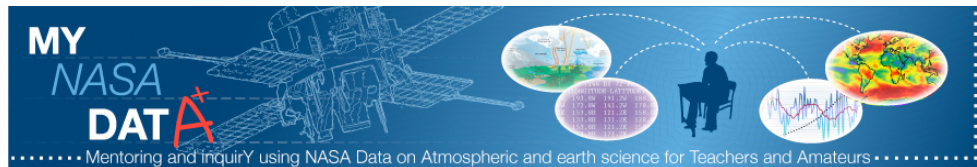
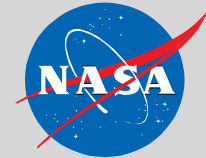


- CERES Data Visualization
- CALPSO, AMSR-E, MISR Data
- New Depth/Animations Functions
- Over 260 parameters added, and more on the way



National Aeronautics and Space Administration

MY NASA DATA Website Make Over



What is MND?

MY NASA DATA (MND) is a tool that allows anyone to make use of satellite data that was previously unavailable. Through the use of MND's Live Access Server (LAS) a multitude of charts, plots and graphs can be generated using a wide variety of constraints. This site provides a large number of lesson plans with a wide variety of topics, all with the students in mind. Not only can you use our lesson plans, you can use the LAS to improve the ones that you are currently implementing in your classroom.

UNDER CONSTRUCTION
Visit the old site: MY NASA DATA - Old Site

MY NASA DATA

Home

Live Access Server

Lesson Plans

Data Sources

Mission

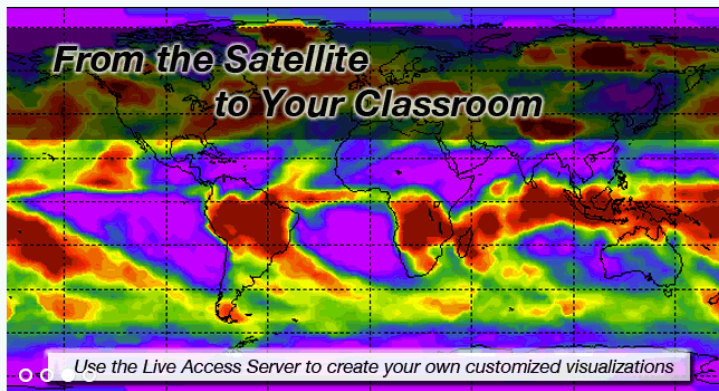
NASA Mission Advert

Observe Your World

Conferences

Meet the Team

Google Custom Search



News from MY NASA DATA, the Science Directorate, and S'COOL

NASA Educators Online Network is offering Free Webinar Series throughout the Month of October (2012).

[It's here, Earth Science Week has arrived and We have the updated schedule of events!](#)

[A big fish in a small pond no longer...](#)

[Meet the Team: Bryan Fabbri](#)

[NASA Earth Science Week: Discovering Careers in the Earth Sciences](#)

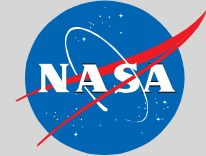
MY NASA DATA(MND)'s new look has put a new spin on data visualization, science concepts, and educational resources.

- Easy to navigate
- Accessible
- Geared towards the user

When you visit our site you can discover and enjoy the resources that are most relevant to your needs. Content is divided into 5 main categories:

- Educators (3 grade divisions/related content)
- Students (3 grade divisions/related content)
- Citizen Scientists
- Researchers
- Using MND

MY NASA DATA: CERES, Aqua, and Terra



- Lessons ~30
- Projects
- Multi-media
- Data
- Live Access Server
- Albedo, Fluxes (EBAF & TRMM)
- Surface Scene Type
- CO2 AIRS on AQUA

Pageviews

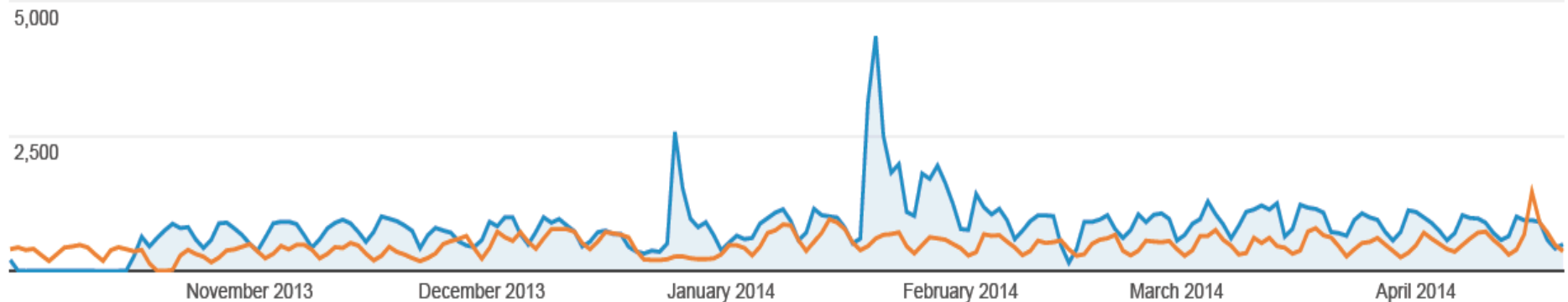
47.83%

301,055 vs 203,649



Oct 1, 2013 - Apr 20, 2014: ● Sessions

Oct 1, 2012 - Apr 20, 2013: ● Sessions



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

+ Visit NASA.gov
+ Visit the ASDC

Search

MY NASA DATA

..... Mentoring and Inquiry using NASA Data on Atmospheric and earth science for Teachers and Amateurs

+MY NASA DATA HOME +DATA ACCESS +LESSON PLANS +COMPUTER TOOLS +SCIENCE FOCUS

[View lesson with Standards](#) [View lesson without Standards](#)

Circle the Earth - Explore Surface Types on a Journey around Earth

Purpose: To use CERES percent coverage surface data with a world map in locating landmasses and bodies of water at Earth's Equator.

Grade Level: 4 - 12

Estimated Time for Completing Activity: One 50-minute class period

Learning Outcomes:

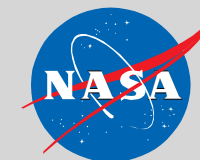
- Locating map locations using latitude and longitude coordinates
- Applying percentage to determine land surface characteristics
- Using a microset of satellite data to investigate surface characteristics

National Standards:

- **Geography:** Places and Regions
- **Geography:** The World in Spatial Terms
- **Math:** Algebra
- **Math:** Connections
- **Math:** Geometry
- **Math:** Number and Operations
- **Science Content:** A Science as Inquiry
- **Science Content:** D Earth and Space Science
- **Science Content:** E Science and Technology

Teacher Feedback

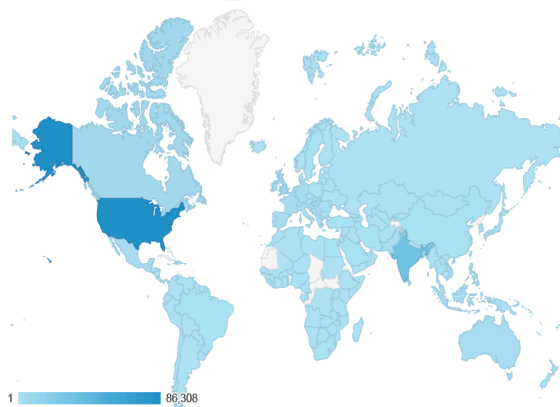
MND Metrics – Oct 2013 –April 2014



Country/Territory Visits

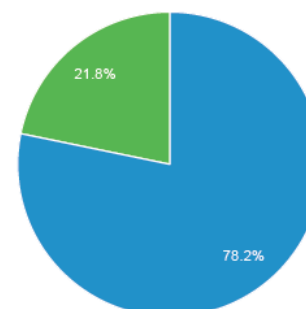
1.	US	86,30
2.	India	31,286
3.	United Kingdom	7,400
4.	Hungary	6,024
5.	Canada	5,304
6.	Australia	2,880
7.	Philippines	2,179
8.	France	913
9.	Germany	883
10.	(Not set)	858

Visits

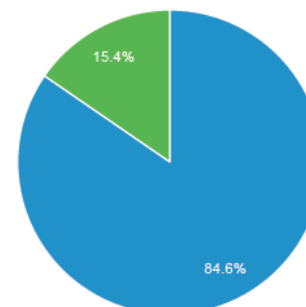


■ New Visitor ■ Returning Visitor

Oct 1, 2013 - Apr 20, 2014



Oct 1, 2012 - Apr 20, 2013



Sessions

74.21%

164,441 vs 94,394



Users

61.21%

129,397 vs 80,267



Avg. Session Duration

11.20%

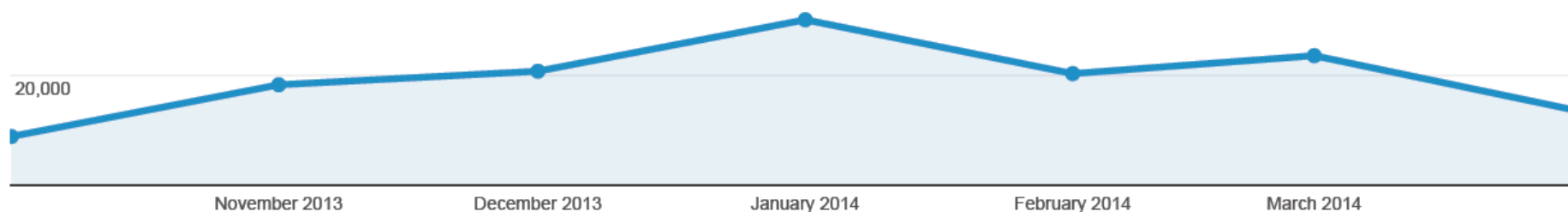
00:02:11 vs 00:01:58



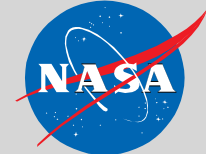
● Users

40,000

20,000



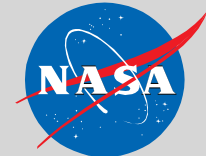
Student Cloud Observations Online (S'COOL)



- Education and Public Outreach arm of CERES
- Backbone of Terra/Aqua formal education effort
- A simple way to involve K-12 students in authentic science
- A source of validation data for the CERES cloud retrievals
- <https://scool.larc.nasa.gov>



S'COOL Report Form Classifications



Student Cloud Observations On-Line
CLOUD REPORT FORM

Observer Information: Rover Name: _____ Team ID: _____ Level: _____
 Date (ex: 2011-01-20): Year: _____ Month: _____ Day: _____ Station: _____
 Local Time (24 Hour Clock ex: 14:20): Hour: _____ Minute: _____ Universal Time (24 Hour Clock ex: 00:00): Hour: _____ Minute: _____

Make A Cloud Observation!

① **Total Cloud Cover:** ☐ No Clouds ☐ Clear (0-10%) ☐ Isolated (10-25%) ☐ Scattered (25-50%) ☐ Broken (50-90%) ☐ Overcast (90-100%)
Sky Visibility: ☐ Unusually Clear ☐ Clear ☐ Somewhat Hazy ☐ Very Hazy ☐ Extremely Hazy
Sky Color: ☐ Deep Blue ☐ Blue ☐ Light Blue ☐ Pale Blue ☐ Milky

② Number of Short Lived _____ Number of Persistent _____ Number of Persistent Spreading _____

③ **What do you see? High Level Clouds**

Cloud Type:	Cloud Cover:	Visual Opacity:
<input type="checkbox"/> Cirrus	<input type="checkbox"/> Clear (0-10%)	<input type="checkbox"/> Opaque
<input type="checkbox"/> Cirrocumulus	<input type="checkbox"/> Isolated (10%-25%)	<input type="checkbox"/> Translucent
<input type="checkbox"/> Cirrostratus	<input type="checkbox"/> Scattered (25%-50%)	<input type="checkbox"/> Transparent
	<input type="checkbox"/> Broken (50%-90%)	
	<input type="checkbox"/> Overcast (>90%)	

④ **What do you see? Mid Level Clouds**

Cloud Type:	Cloud Cover:	Visual Opacity:
<input type="checkbox"/> Altostratus	<input type="checkbox"/> Clear (0-10%)	<input type="checkbox"/> Opaque
<input type="checkbox"/> Alto cumulus	<input type="checkbox"/> Isolated (10%-25%)	<input type="checkbox"/> Translucent
	<input type="checkbox"/> Scattered (25%-50%)	<input type="checkbox"/> Transparent
	<input type="checkbox"/> Broken (50%-90%)	
	<input type="checkbox"/> Overcast (>90%)	

⑤ **What do you see? Low Level Clouds**

Cloud Type:	Cloud Cover:	Visual Opacity:
<input type="checkbox"/> Fog	<input type="checkbox"/> Clear (0-10%)	<input type="checkbox"/> Opaque
<input type="checkbox"/> Nimbostratus	<input type="checkbox"/> Isolated (10%-25%)	<input type="checkbox"/> Translucent
<input type="checkbox"/> Cumulonimbus	<input type="checkbox"/> Scattered (25%-50%)	<input type="checkbox"/> Transparent
<input type="checkbox"/> Stratus	<input type="checkbox"/> Broken (50%-90%)	
<input type="checkbox"/> Cumulus	<input type="checkbox"/> Overcast (>90%)	
<input type="checkbox"/> Stratocumulus		

⑥ **What do you observe? Ground Measurements**

Surface Cover: (Mandatory)	Surface Measurements:
Yes No	(Optional — you may submit any or all)
<input type="checkbox"/> <input type="checkbox"/> Snow/Ice	Temperature: _____ °C or °F
<input type="checkbox"/> <input type="checkbox"/> Standing Water	Barometric Pressure: (Select One)
<input type="checkbox"/> <input type="checkbox"/> Muddy	_____ hPa <input type="checkbox"/> psi <input type="checkbox"/> inches Hg
<input type="checkbox"/> <input type="checkbox"/> Dry ground	<input type="checkbox"/> mb <input type="checkbox"/> atm <input type="checkbox"/> torr (mm Hg)
<input type="checkbox"/> <input type="checkbox"/> Leaves on Trees	Relative Humidity: _____ %
<input type="checkbox"/> <input type="checkbox"/> Raining/Snowing	

Notes:

Updated the Report Form:

- **Total Sky Conditions**
 - Cloud Cover
 - Visibility
 - Sky Color
- **Contrails**
- **Level Observations (low, Mid, High)**
 - Cloud Type
 - Cloud Cover
 - Visual Opacity
- **Surface Measurements**
 - Surface Cover
 - Temperature
 - Relative Humidity
 - Barometric Pressure

S'COOL Quad Chart Overview



Quad Chart for HQ, Jan. 2014, Lin Chambers

The **S'COOL** project involves K-12 students in authentic science, observing clouds at the time of a NASA *Clouds and the Earth's Radiant Energy System* (CERES) satellite instrument overpass. Satellite data are processed, through FLASHFlux, generally within a week, and the correspondence is sent for further analysis.

S'COOL began with a single Virginia middle school in January 1997, and now has registered participants in all 50 states and 84 countries.

S'COOL integrates elements of the Aqua, CALIPSO, CloudSat, Terra and NPP missions.

School-Based

School Name				Latitude	Longitude	City	State	Country
Soo Township Elementary School				46.422690	-84.354170	Sault Ste. Marie	MI	USA

Ground Observation: 120936				Aqua Satellite				Terra Satellite			
Date: 2014-01-03		Local Time: 12:47	Universal Time: 17:47	Date: 2014-01-03		Universal Time: 17:40:00		Date: 2014-01-03		Universal Time: 17:33:00	
Opacity	Cloud Cover	Type	Visualization	Altitude (km)	Opacity	Cloud Cover	Phase Temp(K)	Altitude (km)	Opacity	Cloud Cover	Phase Temp(K)
Total Ground Cloud Cover: Overcast (>90%)				Total Aqua Cloud Cover: 09.60 %				Total Terra Cloud Cover: 09.98 %			
H											
I											
G											
H											
M											
I											
D											
				2.64	Transparent	0.85	Isolated (10-25%) 44.76	2.35	Translucent	3.01	Isolated (10-25%) 42.76
L											
O											
W	Translucent	Overcast (>90%)	Status	1.26	Transparent	2.42	Isolated (10-25%) 54.84	1.08	Translucent	5.71	Isolated (10-25%) 57.22
							mixed 247.39				mixed 248.1

Sky Visibility: Somewhat hazy
Sky Color: Light blue

View Corresponding Satellite Data

- Cloudsat Quick Look
- Cloudsat Tutorial

View Corresponding MODIS Satellite Images

Aqua Rapid Response

Terra Rapid Response

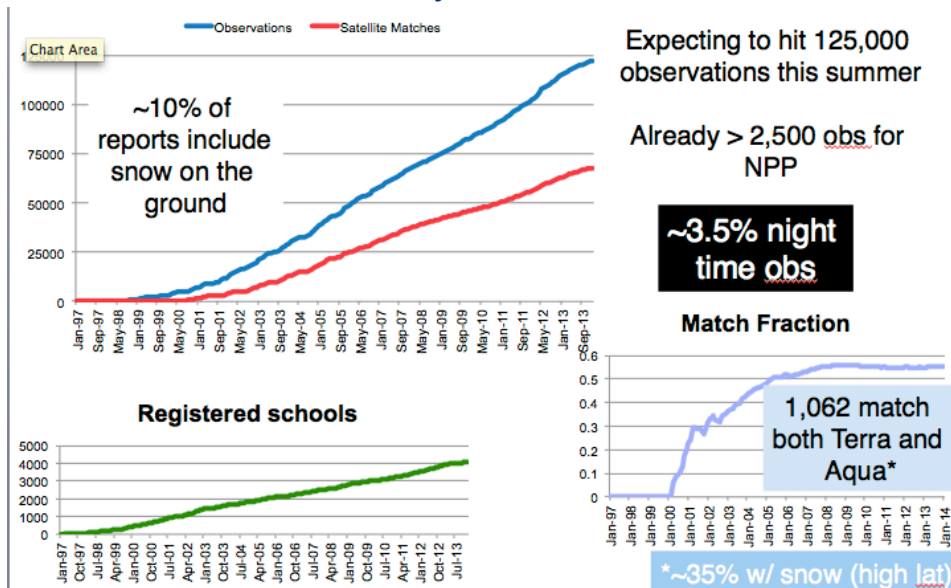
* Worldview does not work with Internet Explorer

S'COOL NASA Worldview Tutorial
S'COOL MODIS Rapid Response Guide

Rovers



S'COOL by the Numbers



Notable Observers

Chartiers-Houston Jr./Sr. High School, PA

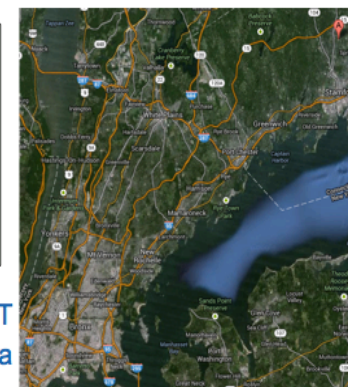
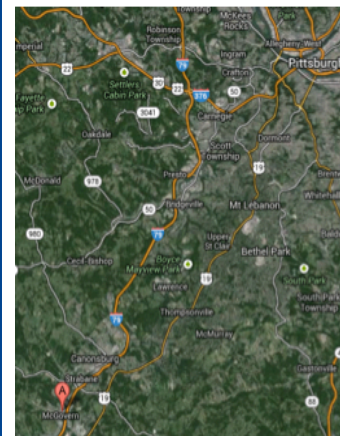
- >10,000 observations from single site
- >1,700 with snow
- >2,500 night-time obs (Terra matches)

Colombia:
3 schools with
> 2,500 obs

Nicaragua:
1 school above
2,500

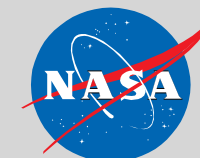
Turn of River Middle School, CT

- >2,500 Rover observations from area



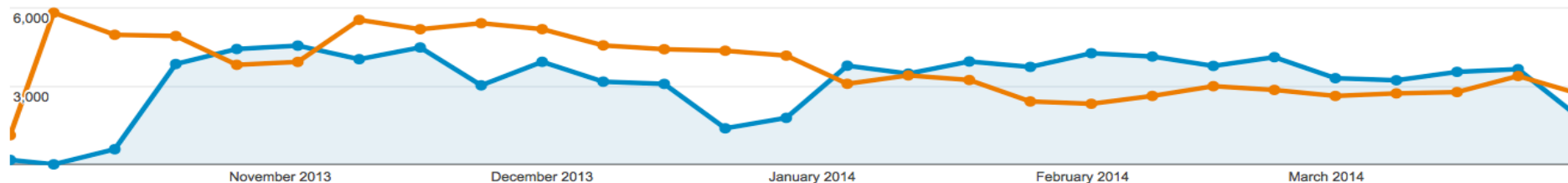
National Aeronautics and Space Administration

S'COOL Website Metrics

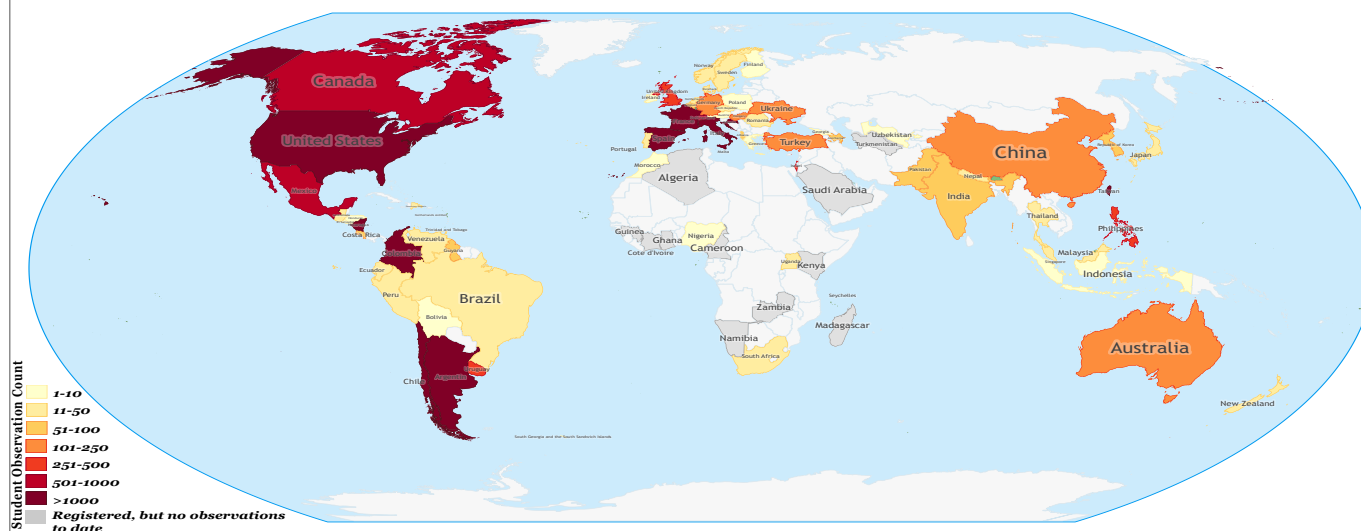


Oct 1, 2013 - Apr 1, 2014: ● Pageviews

Mar 1, 2013 - Sep 30, 2013: ● Pageviews



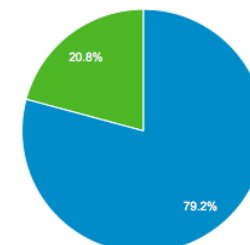
S'COOL Participant Map



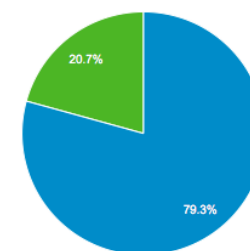
Map as of April 2014

■ New Visitor ■ Returning Visitor

Oct 1, 2013 - Apr 1, 2014

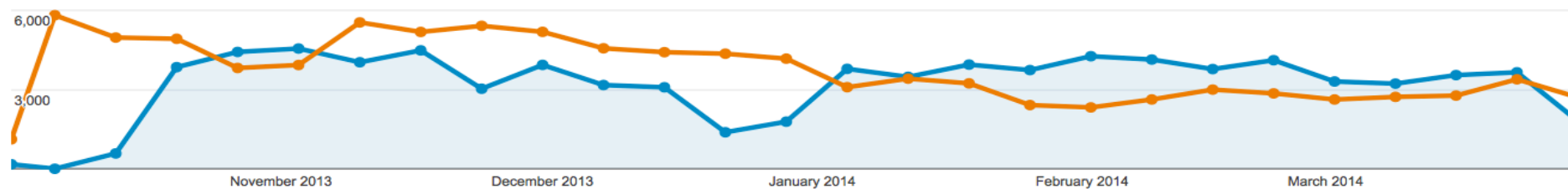


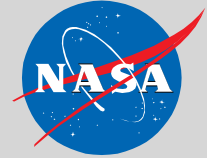
Mar 1, 2013 - Sep 30, 2013



Oct 1, 2013 - Apr 1, 2014: ● Pageviews

Mar 1, 2013 - Sep 30, 2013: ● Pageviews



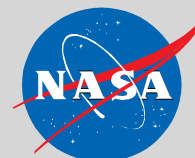


Database of observations - as of April 22nd, 2014

- **87 countries** participating in the S'COOL Project
 - data from 69 countries (79%)
- **> 4,100 registered participants**, 745 distinct Rover Observers
- **76% of S'COOL participants are from USA**
- **> 124,949 observations**
 - 57% of Rover obs. 47% of S'COOL obs. from USA, *48% Obs. combined.*
- **> 70,085 satellite correspondences**
 - (1,138 match both Terra and Aqua data)

- NPP satellite matching coming!

S'COOL has 2,371 ground observations where NPP was selected as the satellite passing over.



Impact Measures (cont'd)

States "Top Five"

- PA 12%
- VA 3%
- CA 3% ↓
- CT 2%
- PR 2%

Countries "Top Five"

- USA 48%
- Colombia 23%
- Argentina 5.0%
- France 5.0%
- Taiwan 4.0%

States "Bottom Five"

- Guam
- Virgin Islands
- Northern Mariana Islands
- D.C.
- North Dakota

Top Ten Observers 2014

Total Observations	Country
10695	USA
3770	Colombia
3277	Colombia
2922	Colombia
2828	Nicaragua
2410	Colombia
2002	Colombia
1912	USA
1781	Colombia
1646	Croatia

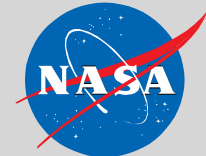
OPEM Stats (FY13)

- Key Activities 30
- Teachers Reached 797
- Students Reached 612

Stats This Year

- S'COOL Registrations 132
- ROVER Recommendations 9
- Material 42

National Aeronautics and Space Administration
S'COOL, CLIPSO Matches



CALIPSO correspondences is working well, we have found no issues with the matches that we have looked at.

118 ground observations that correspond to within 10km of CALIPSO's overpass have been identified.

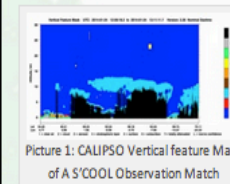
Identified 327 schools that are in CALIPSO's path, potential campaign.

Working:
Finding overpass times for CALIPSO, the movement of the instrument on the box and wanting to use a 10km radius is proving to be challenging.

S'COOL Ground observations are now matching CALIPSO satellite data.

March 27, 2014

The Students' Cloud Observations On-Line (S'COOL) Project involves students of all ages and citizen scientists in real science, making and reporting ground truth observations of clouds to assist in the validation of NASA CERES satellite instrument. We have just added the capability to match to Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO) satellite data to supplement ground observations and help take a closer look at how clouds affect the Earth's weather and climate.



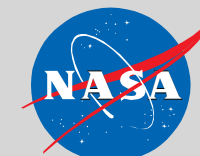
The CALIPSO data that the S'COOL observations is collected by an (Ranging) instrument, this creates a narrow. To put it in perspective, the 1km wide¹, 25 times smaller than the Earth's Surface, CERES satellite line, from the Aqua satellite). Due to the narrowness of the instrument, there may be as many as 16 days

S'COOL Ground Observation & Satellite Data

Latitude	Longitude	City	State	Country
51.527800	-0.139700	London	Outside U.S. - Canada	UK

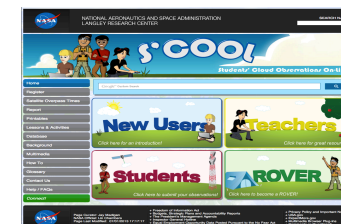
Ground Observation - 121269				Aqua Satellite			
Date: 2014-01-24	Local Time: 13:01:00	Universal Time: 13:01:00		Date: 2014-01-24	Universal Time: 13:02:00		
Opacity	Cloud Cover	Type	Visualization	Altitude (km)	Opacity	Cloud Cover	Phase Temp(K)
Total Ground Cloud Cover: Overcast (>90%)				Total Aqua Cloud Cover: 94.57 %			
H I G H					7.71	Transparent 1.27	Broken (60%-90%) 77.05
M I D					4.01	Transparent 2.01	Isolated (10-25%) 12.88
L O W	Opaque	Overcast (>90%)	Cumulus		1.08	Transparent 1.58	Clear (<10%) 4.63
Sky Visibility: Extremely hazy Sky Color: Pale blue				View Corresponding Satellite Data			
Surface Conditions				View Corresponding MODIS Satellite Images			
Snow/Ice	No			* Worldview does not work with Internet Explorer			
Standing Water	No			S'COOL Worldview Tutorial			
Muddy	No			S'COOL MODIS Guide			
Dry Ground	No						
Leaves on Trees	No						
Raining or Snowing	No						
Temp (Celsius)	10.00						
Relative Humidity	75 %						

National Aeronautics and Space Administration
S'COOL 17th Anniversary



Students' Cloud Observations On-Line 17th Anniversary:

- 17 year on the Project, 7 years with ROVER
- **125,000 Observations hit**
- Over 4,000 Registered Observers, over 700 Rovers
- Science4Girls collaboration with MT
- Launch of New Website
- Sky Art Partnership
- NPP Matches
- GLOBE, sky condition matches
- SciGirls PBS Episode



Thank You for being the 1st!

Your school was one of the first to participate in the Students' Cloud Observations On-Line (S'COOL) Project. This year we celebrate S'COOL's 17th anniversary. Thank you for being the start of our over 4,000 participants with over 122,000 observations, from 84 countries and counting.

Help celebrate S'COOL's 17th anniversary by making ground truth cloud observations right from your school!

Start Today!
 Visit <http://scool.larc.nasa.gov/>
 to participate in this celebration, make an observation, and contribute to NASA climate research.

Extra Postage required

To:
You!

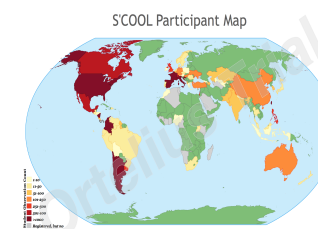
- 1 Register To Participate
- 2 Request Overpass Times
- 3_a Observe
- 3_b Report Your Data
- 4 Explore the Data

For individual observers we recommend our ROVER site:
<http://science-edu.larc.nasa.gov/SCOOl/ROVER/>

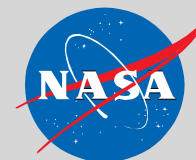
For large groups observing from a permanent observation location such as a school we encourage our S'COOL site:
<http://science-edu.larc.nasa.gov/SCOOl/register>


Science Directorate
 NASA's Langley Research center, Hampton, VA
<http://science.larc.nasa.gov/>

NP-2014-01-545-LaRC
 Graphics credit: NASA Langley Research Center




S'COOL Website Update *Coming SOON!*






NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER




Message of The Month: Test message. This is a test message. The maximum character length including spaces for this area is 100.


[Home](#)
[Register](#)
[Satellite Overpass Times](#)
[Report](#)
[Printables](#)
[Lessons & Activities](#)
[Database](#)
[Background](#)
[Multimedia](#)
[How To](#)
[Glossary](#)
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[Connect!](#)




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NEWS: NOAA's TEACHER AT SEA PROGRAM ACCEPTING APPLICATIONS FOR 2014 FIELD SEASON OCTOBER 1-31, 2013



Page Curator: Jay Madigan
NASA Official: Lin Chambers
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National Aeronautics and Space Administration S'COOL New Products

Sky Condition Activity

Activity Introduction:
In this activity, students discover the importance of sky observations to better understand the effects of aerosols on our atmosphere.

Audience: K-8
Resource Type: Activity or Demonstration
Learning Time: 15-30 minutes
Instructional Strategies: Real-time learning, Inquiry Based Learning

Learning Objectives:
Students will:

- Learn that by observing sky color and visibility, one can see the impact of aerosols on the atmosphere.
- Learn that clouds and aerosols in Earth's atmosphere can be measured with observations through light/sun laser.
- Make the connection that NASA's CALIPSO satellite uses a laser to study the atmosphere from space.

Materials:

- S'COOL Sky Conditions Poster
- Clear Plastic Cups (Suggested: 4" Tall with a 2" diameter base)
- Water
- Milk or Liquid Coffee Creamer
- Shining Light
- Activity poster out (PDF of the back of the poster)

Vocabulary:
Aerosol: Small liquid or solid particles dispersed in the atmosphere (man-made or naturally occurring). Large quantities are often regarded as pollutants in the form of haze and smog. A low amount of aerosols in the atmosphere refers to unusually clear visibility and a deep blue-sky color. Visibility is extremely hazy and the sky color is milky when there are a lot of aerosols present in the atmosphere. (NASA Aerosol Fact Sheet: <http://www.nasa.gov/content/images/content/visualizations/aerosols.html>)
Visibility: The classification of the clarity with which objects can be viewed through the intervening atmosphere into 5 categories: Classically Clear, Clear, Slightly Hazy, Very Hazy, and Extremely Hazy.
Sky Color: The classification of the color of the sky into one of the following 5 categories: Deep Blue, Blue, Light Blue, Pale Blue, and Milky. Clear the horizon is typically lighter due to the presence of aerosols. The darkest part of sky can often be seen about half way between the horizon and directly overhead, in the "near-sun" direction - that is, when you look at the sky with your shadow in front of you. When observing Sky Color you should classify the distant (horizon) color of the sky S'COOL Sky Color Chart. (<http://www.nasa.gov/content/images/content/visualizations/aerosols.html>)
Engagement: Sometimes the sky is a milky color and sometimes it is clear blue and you can see far in the distance, why?
Background:
The sunlight that enters our atmosphere is composed of all the colors in the rainbow. When it hits the atmosphere, as molecules (water vapor, oxygen, nitrogen, CO2, and other trace gases) scatter the light, the color blue most effectively.
The light is also scattered and/or absorbed by particles dispersed in the atmosphere called aerosols. An aerosol can be "gas and vapors, mist and droplets, or tiny particles or smog", such as ash. Aerosols can be nontoxic (man-made) or naturally occurring.
The amount of aerosols in the atmosphere affects our sky conditions. Most aerosols are too small to see but we can observe their impacts by observing and categorizing sky color and visibility. A low amount of aerosols in the atmosphere refers to unusually clear visibility and a deep blue-sky color. Visibility is extremely hazy and the sky color is milky when there are a lot of aerosols present in the atmosphere.
Observing these parameters helps us to understand our sky conditions and make an educated guess about the amount of aerosols in our atmosphere.

Sky Conditions Activity Procedure

Set up:
1. Place a plastic cup on each of the five blue circles on the poster.
2. Fill each cup with 1.5-2" of water.
3. Starting with the second circle from the left, add increasing drops of milk to the cups as you move to the right on the poster. Add milk amount is measured on poster in black text under the circle.
4. Using a strong sunlight, aim milk and to observe an even consistency. (NOTE: You should have an increase of milky water as you move from left to right on the poster starting with clear water.)

Additional Set Up Information:
1. It may help to use the first cup (clear water) and the last cup (milky water) to make the cups in between.
For example:
a. For the Light Blue/Slightly Hazy cup use a half and half mixture of the Deep Blue/Unusually Clear and Milky/Extremely Hazy cups.
b. For the Blue/Clear cup use a half and half mixture of the Deep Blue/Unusually Clear and Light Blue/Slightly Hazy cups.
c. For the Pale Blue/Very Hazy cup use a half and half mixture of the Light Blue/Slightly Hazy and Milky/Extremely Hazy cups.
2. Only fill cup to 1.5-2", to decrease the chance of accidental spills and clean up.

Exploration: Have students observe and compare the "sky color" and "visibility" through each cup.
1. To best observe the sky color parameter, view cup from the top. Look straight down into the cup to view the true color of the blue circle under the cup.
2. To best view visibility parameter, view cup from the top as well as the side. Look through the cup liquid and compare the different cups side by side.

Questions:
1. What does the water and drops of milk stand for in each cup? (Water = Atmosphere, Milk = Aerosols)
2. How does the increase of milk affect the sky color and visibility? (Milky cup = Low Hazy Visibility, Clear cup = high clear visibility and blue sky)
3. What are some examples of these conditions in real life? (High amount of aerosols = pollution or smog, Low amount of aerosols = Clear day or a nice morning to walk the streets of the city)

Explanation: Concept
The amount of aerosols in the atmosphere affects our sky conditions. Most aerosols are too small to see but their impact can be observed by categorizing sky color and visibility. Observing these parameters help participants understand how aerosols scatter and absorb energy entering and leaving the Earth's Atmosphere.

Extension: Enhancements/Lesson Links:

- S'COOL CALIPSO Activity: CALIPSO Profile of the Atmosphere (http://scool.larc.nasa.gov/jsp/printout/CALIPSO_Profile_of_the_Atmosphere.pdf)
- S'COOL Project Report Form (<http://science-edu.larc.nasa.gov/SCool/pdf/form-c.pdf>)
- MY NASA DATA Lesson: Sky Color for Kids (<http://mydata.nasa.gov/986/sky-color-for-kids>)
- MY NASA DATA Lesson: What is Your Sky Color (<http://mydata.nasa.gov/what-color-is-your-sky>)

Evaluation:
Teacher/Trainer assesses participant knowledge, skills and abilities (student development), through activity effectiveness.

SKY CONDITIONS

The amount of aerosols in the atmosphere affects our sky conditions. Most aerosols are too small to see but we can observe their impacts by observing and categorizing sky color and visibility. Observing these parameters helps us to understand how aerosols reflect, refract, and absorb energy entering and leaving the Earth's atmosphere.

*Each circle represents the conditions of an unusually clear, deep blue sky. The addition of drops of milk into the water represents an increasing amount of aerosols in the atmosphere.

	Deep Blue	Blue	Light Blue	Pale Blue	Milky
Sky Color	Deep Blue	Blue	Light Blue	Pale Blue	Milky
Aerosols	Low Number of Particles				High Number of Particles
Visibility	Unusually Clear	Clear	Somewhat Hazy	Very Hazy	Extremely Hazy

Helpful tips for observing sky conditions:

- When observing sky conditions, look for something out of the ordinary. Different locations can have different common observations (commonly clear or commonly hazy).
- To get a good starting point for sky condition observations in your area, wait for a cold front or a storm to pass through. A cold front or a storm tend to "wash" the aerosols out of the atmosphere which will provide the clearest sky conditions for your area. It also helps to take a picture, as this will be a good comparison for later sky condition observations.

Contact the S'COOL Team • scool@lists.nasa.gov

Virginia Standards of Learning Ap

	Grade (Age)	Standard	
8th Standard (School)	K (4-6)	K.3	The student will demonstrate logic, and the nature of
	K (4-6)	K.9	The student will lower patterns in his/her day
	1 (6-7)	1.3	The student will demonstrate logic, and the nature of
	1 (6-7)	1.7	The student will demonstrate logic, and the nature of
	2 (7-8)	2.3	The student will demonstrate logic, and the nature of
	2 (7-8)	2.8	The student will demonstrate logic, and the nature of
	3 (8-9)	3.3	The student will demonstrate logic, and the nature of
	4 (9-10)	4.3	The student will demonstrate logic, and the nature of
	4 (9-10)	4.8	The student will lower phenomena occur and how it behaves
	5 (10-11)	5.3	The student will demonstrate logic, and the nature of
Middle School	6 (11-12)	6.3	The student will demonstrate logic, and the nature of
	7 (12-13)	7.3	The student will demonstrate logic, and the nature of
	8 (13-14)	8.3	The student will demonstrate logic, and the nature of
High School	9 (14-15)	9.3	The student will demonstrate logic, and the nature of
	9 (14-15)	9.8	The student will demonstrate logic, and the nature of

What

2014 marks the S'COOL Project's 17th anniversary and we would like to celebrate with you fun activities over the next year:

- Celebrating launch of the project by making January and February, 2014
- Website update: March 2014
- Anniversary newsletter: July 2014
- Anniversary of S'COOL going international: compare S'COOL data from a different country

Visit the S'COOL Website to see who has become a part of the science yourself: <http://scool.larc.nasa.gov/>

Use your Cloud Teller to practice vocabulary, learn different cloud types, and help with CERES S'COOL cloud observations.

Clouds are an important part of our atmosphere, and scientists are studying how they affect our weather and climate. Clouds affect our overall temperature or energy balance of the Earth and play a large role in controlling the planet's long-term climate. Satellite instruments as well as your ground observation provide one more piece of the puzzle.

Visit the links below for more S'COOL cloud observation resources:

- What to Observe: <http://science-edu.larc.nasa.gov/SCool/FoP/participants-whatobs.html>
- Observation Tips and Tricks: <http://science-edu.larc.nasa.gov/SCool/limits.html>
- Cloud Chart: http://science-edu.larc.nasa.gov/SCool/Cloud_ID.php
- Print a Ground Observation Form and Report Your Observations On-Line: http://scool.larc.nasa.gov/en_rover_obs.html
- Register your class for the CERES S'COOL Project: <http://science-edu.larc.nasa.gov/SCool/register/>

To build the Cloud Teller, see instructions on the back of this page.

Cloud Teller

Broken clouds 50-100% clouds

Overcast clouds 100% clouds

Stratus A puff of white clouds often described as a "puff" or "cotton-like" in appearance, cumulus clouds may appear alone, in lines, or in clusters.

Cumulus A visible gathering of water droplets suspended in the air near the Earth's surface. Fog

Nimbostratus Low-level clouds that cover the entire sky with broad sheets, and that produce steady rain of low to moderate intensity with no thunder and lightning.

Contrails A trail of condensation formed due to the exhaust of jet aircraft.

Cirrus High feathery clouds that usually mean a change in weather is on the way.

Altostratus A type of cloud that is tall, dense, and associated with thunderstorms and other intense weather.

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Cumulonimbus A tall, dark, and heavy cloud that is associated with thunderstorms and other intense weather.

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Altostratus

Observe Your World!, Update



Blog Highlighting the NASA CERES S'COOL Project, the MY NASA DATA Project, and the Science Directorate Outreach Efforts.

NPP S'COOL matches are on the way!

October 29, 2013 | Edit

Thank you S'COOL Observers who have continued to send in NPP matches. We have over 2,000 observations to reference when the data is ready.

“We have been focussing on finalizing and delivering improved software for analyzing MODIS data from Aqua and Terra to detailed cloud properties, particularly over polar cloud algorithms began producing data in July, to have reduced some of the uncertainties in the wave fluxes. NPP has been a lower priority for roughly the same orbit as Aqua and therefore additional information for CERES as long as A calibrations of the VIIRS imaging channels were operation, so that development and tuning of the would have been less than optimally productive higher than MODIS, so the number and arrangement of the channels in the VIIRS suite of channels had to be addressed before we could start regular calibrations have stabilized, the resolution issue and a host of adjustments have been made to channels in order to make the NPP VIIRS cloud products as possible. We have a few final tweaks and hope to deliver the analysis code before the the NPP cloud properties should begin rolling out.”

Over 35 months of archived posts

Celebrate Earth Day with NASA and the S'COOL Team! #GlobalSelfie

April 22, 2014



This Earth Day, NASA is asking people the world over to snap a picture of where you are on Earth Right Now.

EARTH RIGHT NOW

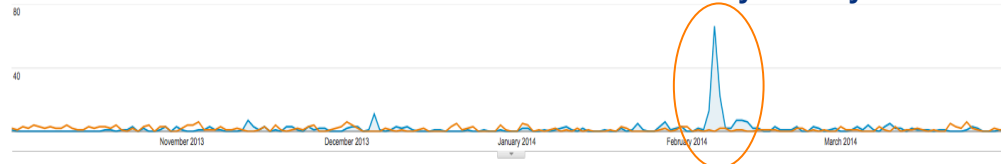
www.nasa.gov/earthrightnow

Join in the fun! Be a part of NASA's worldwide Earth Day celebration! On Earth Day, Apr. 22, 2014, post selfies to your various social media accounts with the hashtag #GlobalSelfie.

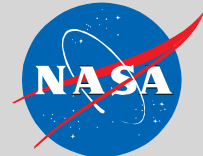
For more information and to print a "Hi NASA! I am on Earth Right Now" sign in your language please visit: <http://www.nasa.gov/content/goddard/globalselfie/#.U1Vdr1KAW7R>

Oct 1, 2013 - Apr 1, 2014: Sessions
Mar 1, 2013 - Sep 30, 2013: Sessions

Visitation has remained steady this year.



S'COOL ROVER Observations on MAGIC, *Update*



P.I.s: ERNIE LEWIS, MIKE REYNOLDS

GPCI is a project comparing data from the major climate models (Marine stratocumulus) MAGIC Marine ARM (atmos rad measurement) GPCI investigation of clouds data to help refine and validate models of Earth's climate,"
 Img.

S'COOL has 24 close to complete matches.

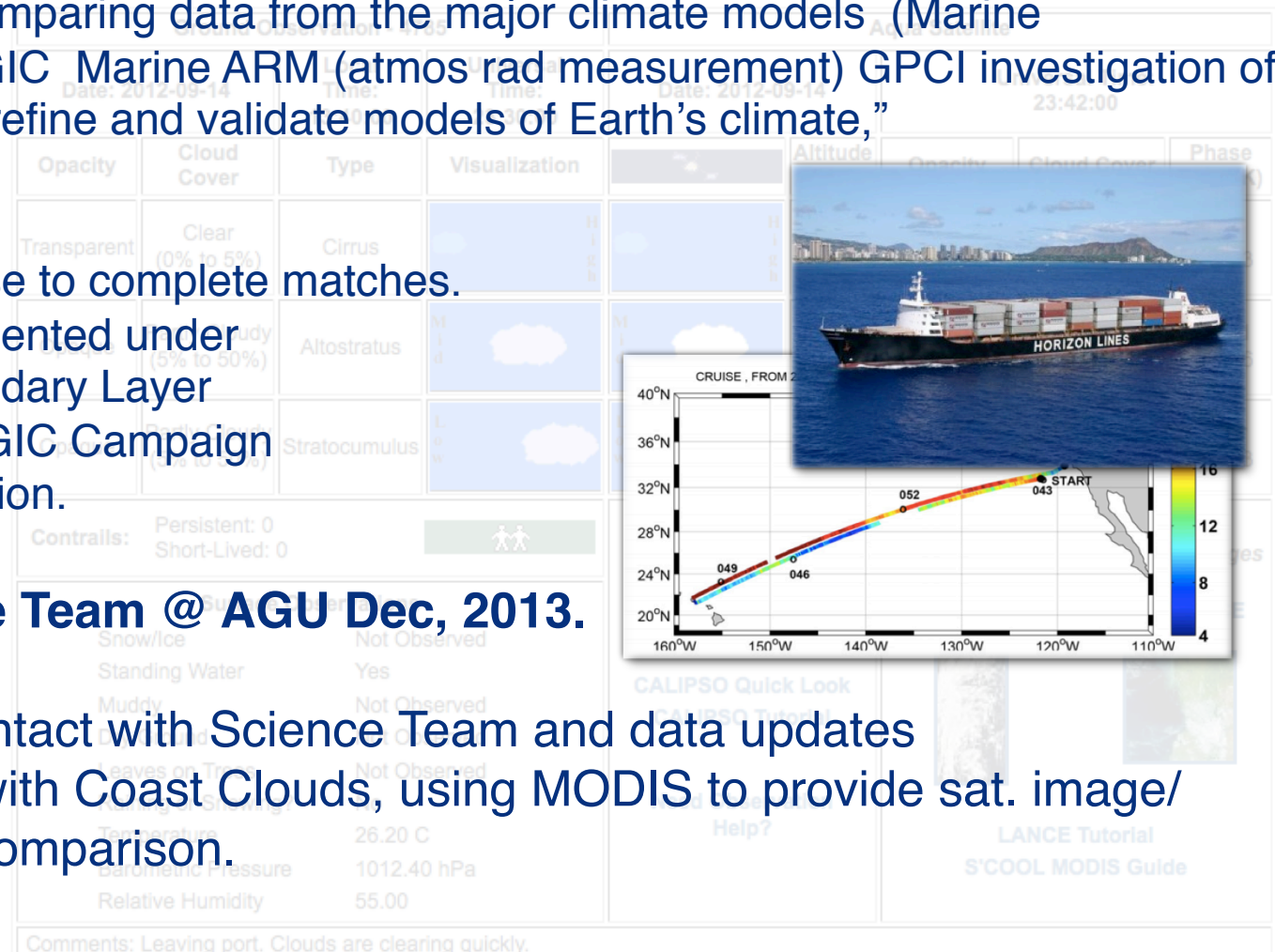
Analysis will be presented under
 Session A015: Boundary Layer
 Clouds and the MAGIC Campaign
 at AGU; poster session.

Met With Science Team @ AGU Dec, 2013.

Moving forward...

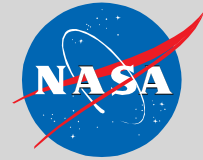
- Maintaining contact with Science Team and data updates
- Collaborating with Coast Clouds, using MODIS to provide sat. image/ phone image comparison.

Age	Age Group	Gender	Height	Longitude	City	State	Country
MAGIC	Adult	Expert	21.31	-157.87	HORIZON SPIRIT		USA



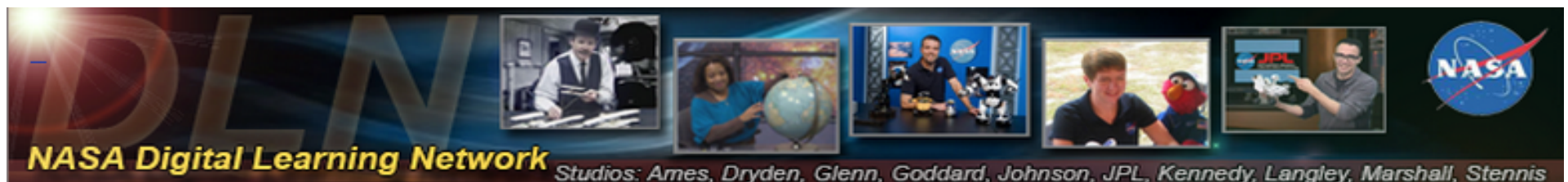
National Aeronautics and Space Administration

S'COOL/MND Outreach: Ambassadors, Conferences, Workshops

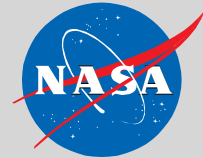


Upcoming:

- VAST Conferences
- NSTA Conferences
- LEARN
- InSTEP
- GLOBE Training, Mission collaboration
- NASA DLN Module Presentations



Outreach Involvement/ S'COOL's Reach



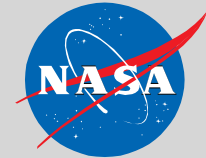
Other Events:

- Office of Education collaborations
 - STEM Mania series
 - Ask NICE series
 - Digital Learning Network Module
 - STEM Spanish Inversion Module
- VASC/VLM Homeschool Day
- AMS Teacher Workshop
- VASC Member Appreciation Night
- 17th Anniversary
- Air Quality Awareness Week, Citizen Science Feature
- Earth Day # GlobalSelfie Celebration, **TODAY!**
- InSTEP, Pre-service Teacher Workshop
- LEARN workshop, GLOBE training

**Thanks to all
who participated
or presented
S'COOL or MND!**



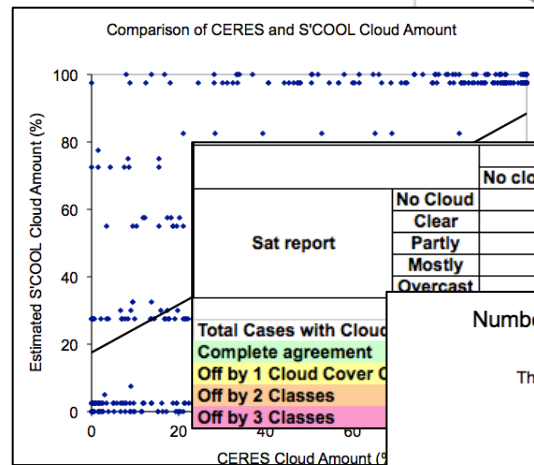
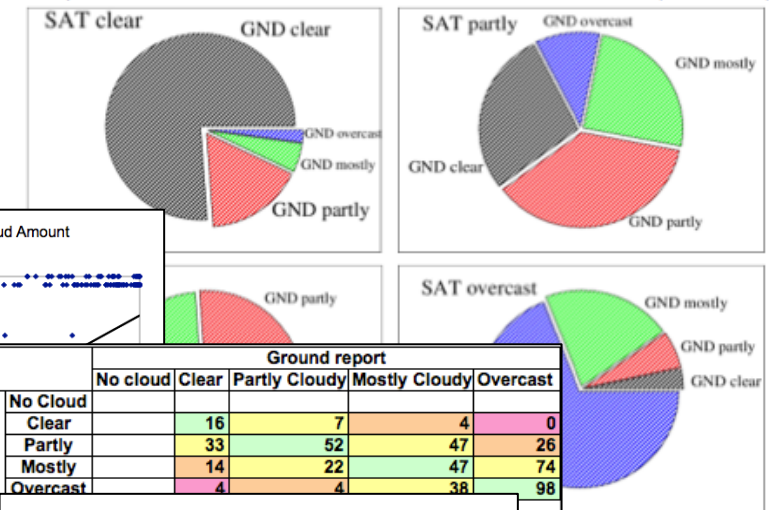
Application of Citizen Science and Outreach



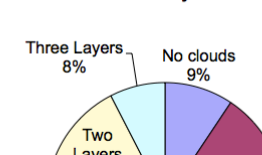
Reminder, Application Of Citizen Science Data...

- Validation
- Analysis
- Campaigns
- Summer Student
- Collaboration
- Ect...

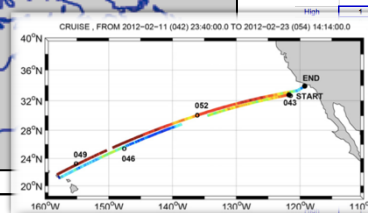
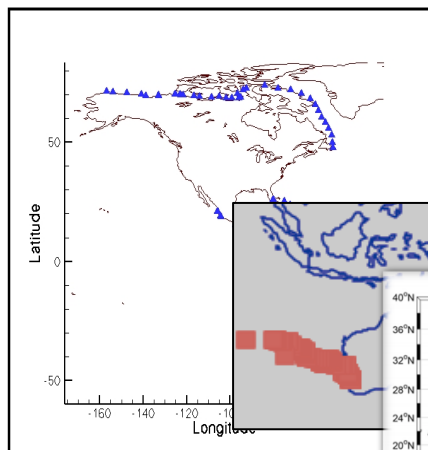
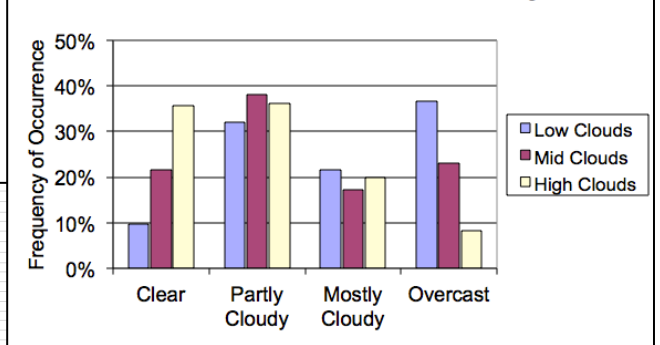
Comparison between Ground Observations and Terra Satellite data. (37997 obs.)



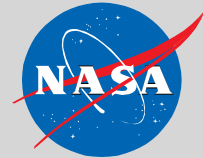
Number of Cloud Layers Observed



Observed Cloud Amount for Different Cloud Heights



Agree		Disagree		Total	
Ground	Satellite	Ground	Satellite	Ground	Satellite
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 1		Table 2		Table 3	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 4		Table 5		Table 6	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 7		Table 8		Table 9	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 10		Table 11		Table 12	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 13		Table 14		Table 15	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 16		Table 17		Table 18	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 19		Table 20		Table 21	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 22		Table 23		Table 24	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 25		Table 26		Table 27	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0
Table 28		Table 29		Table 30	
High	0	0	0	0	0
Mid	0	0	0	0	0
Low	0	0	0	0	0



- **Make S'COOL Rover observations!**
- **Present S'COOL/MND** – scripted materials available
- **Advertise/Archive** your science data on MND
- **Dig into Data**-new opportunity within data analysis (CALIPSO, CloudSat)
- **Translation** Services needed!
- **Serve as resource** for scientific content questions sent in by participants
- **Connect with observers** in every state and 87 countries
- **Contact** any one of the team members for posting to the blog or other information
 - scool@lists.nasa.gov or mynasadata@lists.nasa.gov

<https://mynasadata.larc.nasa.gov>

<https://scool.larc.nasa.gov>

<https://science-edu.larc.nasa.gov>

Email us at: scool@lists.larc.nasa.gov or mynasadata@lists.larc.nasa.gov

CERES Science Team Meeting



Thank you for you
time!

Help us celebrate
S'COOL
anniversary and
hitting 125,000
observations...

Cake in the Lobby!

scool@lists.nasa.gov
mynasadata@lists.nasa.gov